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The CHEMIST

SUMMER, 1934
JUNE, JULY, AUGUST

Publication of The AMERICAN INSTITUTE of CHEMISTS

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The CHEMIST

Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.

ALAN PORTER LEE, F.A.I.C., *Editor*, 233 Broadway, New York City

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Institute Luncheon
At Cleveland

A Committee of the National Council, headed by Ross A. Baker, F.A.I.C., has completed plans for an Institute Luncheon for all members of the Institute and their guests to be held in Cleveland, Ohio, during the Fall Meeting of the American Chemical Society. The Committee is pleased to announce that an interesting speaker will attend the luncheon and make an informal address. Dr. Baker writes to THE CHEMIST as follows:

To All Members, American Institute of Chemists

We hope to see you at the A. C. S. Meeting in Cleveland. Don't fail to attend the INSTITUTE LUNCHEON at the CLEVELAND HOTEL, THURSDAY, NOON, SEPTEMBER 13th. You will meet old friends and make new ones at this brief informal function. Your guests will be welcome. Advance reservations for the luncheon may be made by postcard addressed to

Ross A. Baker
Department of Chemistry
The College of the City of New York
New York, N. Y.

or to

Norman A. Shepard
Research Department
The Firestone Tire & Rubber Co.
Akron, Ohio

Tickets will be available at the Registration Desk

The Chemist—Philosopher: Humanist

By John H. Finley, LL.D.

Address delivered by a great Philosopher upon the occasion of presentation of the medal of The American Institute of Chemists to James B. Conant, President of Harvard University.

THE chemist has drawn forth from his blackness of coal tar the colors of the rainbow (and some that are not clearly seen in ordinary vision of that sign of promise) and not only these hues but a fragrance equaling or surpassing that of the rose and a sweetness a thousand times sweeter than the honey and the honeycomb. He has made synthetic rubies fit to put beside those mentioned in Job as only less precious than wisdom and not to be distinguished except in size from the famous ruby of Shah Akbar the Great. He has found that those theoretical units of matter (which Plato, scorning "the ever shifting spectacle of this visible tangible world," imagined to be the "immutable essences of things,") are themselves as mutable as the tangible and the visible. He has even found a way to restore that which rust has corrupted and so has made it safe to lay treasure up on earth except where thieves break through and steal (*ubi fures furantur*). He has helped farmers and horticulturists to create new "races" of grain, to grow crops and fruits, which the Almighty himself had not produced unaided, and by using Jove's own instruments has stolen nitrogen from the air as Prometheus filched the fire; he has helped the astronomer to loose the bands of Orion, measuring its Alpha star Betelgeuse as he would determine the diameter of a penny at a distance of a thousand miles; he has conspired with the physicist, the architect, and the engineer to create substances out of which to build more stately mansions for the souls of men in transit across this earth; and he has joined hands with the biologist not only in searching out the origins of life but also in battling to keep off its predatory pathogenic enemies and so postponing death. Berthelot, the father of synthetic chemistry, has said of this creative science that it is "more powerful, more varied, more ingenious than nature itself," if indeed "an art that adds to nature" is not "an art that nature makes."

I have made this rash and hurried excursion into a field where even Phi Beta Kappa men, instructed in the chemistry of forty years ago, when the atom was indivisible and immutable, the same yesterday, today and forever, must enter with peril, not to discuss this method, but merely to find background for the question as to whether this synthetic creative process which is beginning to do so much for material civilization has not a contribution to make to its cultural advancement; whether culture may not without losing its quality (which remains after all "the only genuine human ideal") extend its borders to include the products, intellectual, moral, spiritual, of other than the traditional (and what have come to be considered natural) disciplines; whether the new discoveries in natural law have not some new values to give to the spiritual world (for the mere fact, whatever its physical import, is sterile unless under it, as Henri Poincaré said, the soul of the fact is seen—unless it gives, I would add for myself, new analogy for the interpretation of human life, since that seems to me the chief end of science); whether there is not a synthetic something "just-as-good" which those who create and carry on commerce in the "commodity of matter" have also to offer as "merchants of light," whom Bacon would have had minister to the New Atlantides, or "merchants of sweetness and light," as Matthew Arnold would have called them, if indeed he could have admitted culture in any tradesman, whatever his wares.

IN CHEMISTRY equivalency is first determined by analysis and analysis must come first in education as in chemistry; but it can be made only while the material is in the alembic or crucible. It is to the credit of that great teacher of chemistry, Dr. Charles W. Eliot, who became the great educational leader, that new elements of discipline have been brought into our college curricula and subjected to analysis. The synthetic process is gradually availing of the results. We may have been a bit hasty in putting the labels of equivalency on some of them and doing so on purely quantitative bases. On the other hand, I think we who have a scholarly fondness—acquired it may be on the part of some of us, but none the less real—for the fruit of Minerva's olive tree, have a prejudice against any proposed substitutes for the oil that has been sanctified by prophet and priest and glorified by philosopher and poet.

I often recall a dinner of the cotton-seed crushers of the United States, which I once attended but with a feeling that it was a rather uncultural association for a college president. There I learned, however, that after

the cotton bush had out of its fibres clothed the naked with prismatic ginghams, denims, poplins, and the like, it had sufficient material left to produce more so-called olive and other oil than all the olive trees actually produce, not to mention cottolene, unsinkable soaps, mattresses, cattle feed and bread; and before the evening was over, I saw the cotton boll as an olive tree, a sheep, a silk-worm, a cow, a razor-back hog and a dirigible balloon, all wrapped up in the most beautiful white package that the Almighty ever tied to the twig of a bush.

Of such neutral synthetic food, as a modern chemist has said, the Hindu who can eat no fat from the sacred cow, the Mohammedan and Jew who can eat no fat from the abhorred pig, and the vegetarian, can all partake with immunity; and in the synthetic purple which the murex anciently supplied to leisurely royalty alone, the demos may now clothe itself culturally.

Is it not because we have not yet seen the things about us in their poetic significance—the very commonplaces of life—as the Greeks did, that we cannot think of them as having culture values? Is it not this that is needed to lift the modern cities "into that poetry which every one who knows mankind knows to be immeasurably more common than the commonplace?"

THE scholar must with his classical spirit come into the crowded city and there recognize and enhalo the work of those who have reared their zikkurats higher than those of the inhabitants of Ur, in order to have wider commerce with men. There was never greater need of this classical spirit in setting the standards for the new creation—for synthetic culture. To it even the merchants in the agora and the workmen at their trades must look, not to seek out for them words modulated to Greek lyres or Latin lutes but to learn thoroughly the measure and poetry of true life.

Matthew Arnold, it will be remembered, defined culture as "the criticism of life by gifted men alive and active with extraordinary power at an unusual number of points." But that is only its analytical function, its initial definition, the first stage of culture. If it stops there, it is a futile activity, unless other gifted men "alive and active with extraordinary power at an unusual number of points" synthesize into new forms of life and higher culture the elements torn apart by criticising analysis. It is upon the second stage that we are entering in education, though perhaps we have not gone far enough in analysis to furnish much material for the synthetic specialists.

I have thought that a national group of "gifted men," the most gifted, should make it its business to find out by criticism, the atomic content, so to speak, culturally, of every discipline and then work out the formulae of possible compounds. It is a difficult undertaking. Some minds (like benzene, which Michael Faraday discovered a hundred years ago), have so many creative possibilities. But I cannot think of an enterprise in behalf of culture more worth undertaking. So far concerted effort has been largely quantitative as defined in entrance units and Carnegie counts. And we have now an organic chemist to undertake the direction of such an educational and cultural synthesis, a catalytic prophet of a new humanism—a humanism that is willing to listen to the last scientific word of the gnat or the atom, that does not fear contamination by the useful, that glorifies labor yet is not ergocentric, that offers the wisdoms of leisure, that has the imagination to see the "soul under the fact," that is ready to go into the agora and teach its men of business to become merchants of light—humanism that will pursue the interesting with disinterestedness, that will liberalize the practical by unselfish use and interpret even the commonplaces of life in their spiritual significance. With such a humanism instructing our creative, synthetic energies, the world will "move on," despite all depressions, and tonight you recognize such a humanism in giving your medal to the second chemist-president of Harvard.

AND Dr. Conant, when you have in the latter quarter of this century come to the end of your synthesizing, may the epitaph which was written upon the tomb of one Boyle Godfrey, Chemist, be with only slight alteration serviceable for yours:

"A Man, who in this earthly Laboratory
Pursued various Processes to obtain
Arcanum Vitae
Or the Secret to live;
Also Aurum Vitae
Or the art of getting gold
Pro universitate
Rather than making gold
Alchemist-like.

"He departed as poor
As the last Drops of an Alembic.
For Riches are not poured
On the Adepts of this World.
Though fond of News, he carefully avoided
The Fermentation, Effervescence,
and Decrepitation of this Life.
Full ninety Years his exalted Essence
Was Hermetically sealed in its Terrene Matrass.
But the radical Moisture being exhausted,
He could not suspend longer in his Vehicle,
But precipitated gradatim,
Per Campanam,
To his Original Dust.

"May that Light, brighter than Bolognian Phosphorus,
preserve him from the Athanor, Empyreuma, and
Reverberatory Furnace of the other World,
Depurate him from the cares of this,
Highly rectifie and volatilize
His aetherial Spirit,
Bring it over the Helm of the Retort of this Globe,
Place it in a proper Recipient,
Or Christalline Orb,
Among the Harvardian Elect
Till the general Resuscitation,
Deflagration, Calcination,
And Sublimation of all Things."

The American Section of the Society of Chemical Industry announces the election of the following officers to serve for the current year. Chairman: Robert J. Moore, F.A.I.C. Vice-Chairman: W. D. Turner, F.A.I.C. Hon. Secretary: Foster D. Snell, F.A.I.C. Hon. Treasurer: J. W. H. Randall, F.A.I.C.

In addition, five new members were elected to the Executive Committee to take the place of retiring members. Those newly elected are Lincoln T. Work, Wallace P. Cohoe, Albert E. Marshall, James G. Vail and Charles A. Lunn.

Committee on Professional Education

By M. L. Crossley, F.A.I.C., Chairman

YOUR Committee respectfully submits the following report: During the year 1933–34 the activities of the Committee have been limited by the lack of funds available for its work. In the preceding year copies of the report compiled by the Committee were sent to all of the colleges, universities, and professional schools in the United States offering chemistry, and it was planned to follow up the leads which were indicated from the letters acknowledging receipt of the report. It will be recalled that 110 replies were received and that the majority of them endorsed the report. Many offered to cooperate with the Institute in securing the desired result. Two of the replies were antagonistic to the suggested outline of minimum requirements for the Profession of Chemistry. Their opposition was no doubt based on a misunderstanding of the report. A careful reading of their letters showed that they had not studied the report thoroughly and that they were taking the opportunity to express their preconceived views of what they considered their schools qualified to do. In a number of cases the replies indicated that the schools had had special meetings to consider the report, had compared the suggested requirements with their own requirements and found that they either met them fully or that their curriculum was more highly specialized, requiring more chemistry and less of the humanities. They admitted the force of the argument for a broader training and in some cases stated that they were considering the advisability of increasing the requirements in languages, political and social science, and philosophy. Owing to the great differences in the schools giving graduate work, there was no unanimity of opinion concerning the suggestions by the Committee that chemistry be recognized as a profession and definite prerequisites set up for the required training.

As soon as adequate funds are available, the Institute should again communicate with the graduate schools and try to obtain recognition of the professional status of chemistry, and then cooperate with them to establish the minimum prerequisites for the training for the profession. As a necessary preliminary to the securing of this result, it is desirable to secure the cooperation of the departments of chemistry in the above institutions. We should strive during the coming year to elect to fellowship as many as possible of the professors of chemistry in the graduate schools.

Acceptance Address

By James Bryant Conant, LL.D.

Medalist in accepting Institute honor forecasts progress in research through greater cooperation between different branches of science.

PRESIDENT Crossley, Members of the American Institute of Chemists, and Invited Guests: I cannot help feeling that this is rather in the nature of a posthumous award. I appreciate it none the less, I assure you. From now on it is extremely unlikely that I shall be in a position to continue my researches in chemistry, but for this very reason I shall prize this award and treasure this high honor of the American Institute of Chemists. I am very sorry that my duties in Harvard as President prevented me from preparing a formal address. The first year in office of a university president is a hectic one and leaves but little time.

In spite of not having prepared a set address on this occasion, I should like to take the opportunity of saying a word about the future of chemical investigations in two fields in which I am much interested: the application of quantitative methods to the study of organic reactions, and the study of the structure of compounds of biological importance. In both these fields, it seems to me, future progress will depend more and more on cooperation between the different branches of science. This cooperative effort will involve not only individuals in the same institution but men in different universities. By this means it will be possible to have a combination of abilities and skills—a pooling of the energies of many investigators. All of you who are familiar with the

recent advances in the field of biological chemistry know how such team play has led to very significant advances. I have only to mention recent work on the subjects of hormones and vitamins.

It seems to me that the problem of a university today with regard to science is the problem of first of all finding the right men—those who have knowledge and ability to carry forward the advancement of science —and then creating atmosphere in which these men will play together. I am using the term "play" advisedly in both its slang sense and its strict sense. The best work in research is done by those who find it play as well as work. Only in rare instances has the research chemist who considers his task unpleasant succeeded. I am far from advocating any blueprint plan of cooperation. One must hope to create such an atmosphere that the scientists will associate themselves together in a common attack upon certain problems. If I am right, the future in the sciences will depend more and more on this sort of work. Perhaps the day is already gone when the individual investigator can work in isolation and achieve results unaided. Perhaps this cooperative research is not quite as exciting as single-handed combat. We may mourn the passing of the day when one person alone could be the discoverer of some new and vital portion of scientific knowledge. But this sacrifice of individual achievement will be repaid to some extent by the pleasures incident to cooperative work.

WHILE listening to Dr. Finley, something he said reminded me of a remark of Dr. Charles W. Eliot in his inaugural address in 1869: "Science, no more than poetry, owes its best warrant to its utility." The importance of science as well as of art and literature lies in the extent to which it liberates the human spirit and ennobles the human mind. People may remember us of the twentieth century not for the remarkable material success we have had but for the really great triumphs of mankind in being able to achieve the modern discoveries in physics, chemistry, and biology.

And now I should like to be quite technical for a few minutes and speak specifically about certain problems in organic chemistry. There is much yet to be done in connection with the quantitative study of organic reactions. The essential problem is the relation of structure to the rates of reactions of different substances and the energy changes which accompany such reactions. This is theoretical organic chemistry, and it has often become a most involved field. The arguments are at times almost as tenuous as the mediæval arguments on theology. In

my opinion the goal has not always been clearly defined and many of the measurements made have been of little value. Too much has been expected, perhaps.

We have attempted to interpret relatively small changes of rate of reactions or equilibrium constants and relate such variations to change in structure. Now as I have often emphasized in my papers, our measurements are almost always made in solution and the nature of the solvent may change the rate or the equilibrium constant by as much as tenfold. Hence, I deduce a rule which I have sometimes called my "power of ten rule." It is as follows: Don't attempt to relate changes in structure with changes in rates or equilibrium if the variation is less than tenfold. If the energy measurements are referred to the gas state then that is a different story and smaller differences may be significant. I shall give a few examples to illustrate what I mean. By substituting a hydrogen atom for a methyl group in a certain compound, the rate of some reaction may be increased fivefold or the dissociation constant of some acid may be increased 0.3 of a pH unit. Such facts don't interest me in the least. In another solvent the relative rates of the methylated and unmethylated compound may be in the reverse order; the two dissociation constants (if they are acids) may be the same.

I believe if we will but concentrate our attention on the large differences in rates and energy changes produced by changes in structure, we shall see that a very highly developed body of principles is already in existence. The problem of the relation between structure and energy changes is well on the way to being solved though more accurate determinations of heats of organic reactions are badly needed, to be sure. When we have these we shall have a fairly complete story. We must then leave to the physical chemist the difficult problem of relating the nature of the solvent to its effect on rates of reaction and equilibrium constants.

Turning now to the other large field in which I have been interested, I should like to present an idea of mine which I shall be unable to carry further. I believe more attention should be paid to the biochemistry of plants. There has already been done an enormous amount of work on the study of the biochemistry of animals. Plant biochemistry has been relatively neglected. A particular hobby of mine is the idea that by studying the lower plant forms, the pigmented thallophytes such as diatomes, algæ, etc., we might find an interesting connection between their stage of development and the chemical constitution of many of their constituents. This is a difficult task that the botanists, physi-

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Institute Objectives

By Henry G. Knight, F.A.I.C.

Address presented at the medal presentation meeting setting forth the purposes of The American Institute of Chemists and the value of the Institute to the individual and to the chemical profession.

IT IS written in the constitution of The American Institute of Chemists "That its objectives shall be to advance the profession of chemistry in the United States of America." To attain these objectives a certain procedure covering ten broad projects is declared as the working basis of the activities of the Institute. One of these projects is to establish and maintain a standard of proficiency of such excellence as to insure competent and efficient service. Unfortunately, perhaps for the chemist in America until the organization of the American Institute of Chemists no standards of training and experience in the science and art of chemistry were recognized. It was, therefore, very largely a matter of individual preference whether a man advertised himself as being a chemist. There was no authoritative body of men or tradition which could hope to successfully question his status and right to the use of the title. Even today colleges have not standardized on the amount and character of training that a student must have to be granted a baccalaureate degree with a major in chemistry. While little question can be raised concerning the character and amount of training given by the better grade colleges and universities, this is by no means true of all colleges offering majors in the science.

It is quite generally conceded that a four-year college training even of the best is not sufficient to warrant an individual to be recognized as a chemist, notwithstanding several thousand in the United States today are using the title. They or someone seem to think they are entitled to it to the detriment of the whole profession. Without further training or experience—better both—they cannot be considered qualified to aspire to a higher place in the commercial and industrial world than chemists' helpers. This fact is not generally known to the public at large.

Chemistry is the one science that has very wide industrial and commercial application—hence the numbers of people engaged in the pro-

fession far outnumber those engaged in professional work in other sciences, such as physics, mathematics, botany, zoology, etc., so that the standardization of chemical training and experience is far more important for the individual and as a protection to the employers.

In the older professions of law and medicine, well defined standards are insisted upon for the training of students, and upon completing the prescribed courses the student receives a degree the very name for which designates clearly the training received, which in turn gives him the privilege of practising his profession. Furthermore, state boards of examiners see to it that spurious degrees do not receive recognition and examinations are set as a further protection. The degrees M.D. and L.L.B. speak for themselves. Even the engineer is recognized by the degree which the college confers upon him. Even though the state in which he practises makes no requirement he is known as an engineer by the degree he has received. Further, rather definite standards have been set for the training in the advanced fields of engineering. The pharmacist is protected by a degree backed by well defined standard requirements and even the nurse receives a special certificate.

THERE is no question, I think, that the high proficiency in the several professions named and the advance which has been made during the last 20 years can be laid to the activities of strong professional associations having for their objectives the advancement of the professions which they represent. Some of these associations have become so powerful that they practically dictate to professional schools and colleges not only the curriculum but also the grade and character of faculty employed, if the institutions are to be accredited and receive the endorsement of the association. While there may be some danger in exerting such a powerful influence from the standpoint of the greatest interest of the public, I know of no instance where this power has been abused.

The American Institute of Chemists has established definite standards of efficiency of such excellence as to insure competent and efficient service to the public by any one who is elected a Fellow of the Institute. This is a protection to the individual chemist who belongs to the Institute as it places the chemical profession on a definite, standardized plane and protects the legitimate profession against unfair competition. There are four classes of membership in the Institute: Fellows, Associates, Juniors, and Student members.

A Fellow in the Institute must have a minimum of six years of collegiate and post-graduate work in chemistry or chemical engineering,

at least two years of which training must be of an advanced nature, or one who can demonstrate to the satisfaction of the Council that he has the equivalent of this educational training and he must have had at least five years of experience and responsibility in the practice of the profession. This is as high a standard as is recognized by any of the older recognized professions. Associates of the Institute are men who have had the equivalent training of Fellows but have not yet had the experience and responsibility required of Fellows. Juniors consist of those who have received the bachelor's degree or its equivalent on completion of four years in chemistry or chemical engineering in an educational institution of recognized standing. Student members are those who have attained the fourth year in chemistry or chemical engineering in an educational institution of recognized standing. The fifth class consists of honorary Fellows, men who have given the greater portion of their lives in the service of the science and who the Council feels should be honored for services. Junior and Student members are really chemists in training. Associates are men who still require some further experience, while the qualifications for Fellows are such as to warrant the confidence of the public and a standing with other professions.

The Institute has been active in attempting to secure adequate basic training for the profession and to admit as Fellows into the Institute only those of approved education, competency and character. I think the roster of the Institute speaks for itself concerning the character of its Fellows. The Institute has provided and is enforcing a code of ethics of professional conduct which insures the public against fraudulent and unethical practice and which, I think, justifies even at this early day the confidence of the public in the integrity of the chemist.

NO PROFESSIONAL group can thrive and prosper unless the economic status of the profession is upon a satisfactory, high plane. To this end the Institute has cooperated with employers to secure a satisfactory appreciation and value of the service of the chemist, and there is a growing recognition of his importance in industry and in public service.

Two great professions have been important factors in furthering the economic and industrial advancement of the Nation during and since the World War, the engineering profession upon the one hand and chemistry upon the other. Engineering and chemistry today in their various phases and aspects are being applied to practically all industry. Those industries which have supported research and science to the full-

est are the industries which have prospered most during the severe depression through which we are passing. The profession of chemistry is becoming a potent force in the advancement of the intellectual and material progress of the United States of America as the result of which the Nation has assumed its rightful place as a leader among the nations of the world in thought and scientific accomplishment.

To enhance the prestige and distinction of the profession the Institute gives recognition by appropriate means for distinguished services to the profession. Already eight men and one woman have received such recognition and the medal which we have awarded today to Dr. Conant goes to the tenth medalist. It is the highest honor within the gift of the American Institute of Chemists. In giving honor the Institute honors itself.

Chemistry is the foundation science in this modern world. Proficiency in the science and integrity of the individual are essential if the chemist is to go forward in his profession and the public is to receive adequate protection. The American Institute of Chemists is the organization the aims and objectives of which will accomplish this result. To be elected a Fellow of the American Institute of Chemists is an honor. F.A.I.C. is a recognition of excellence. It stamps the individual as a man well qualified to practise the profession of chemistry, a man in whom the public can have confidence. It places the profession upon a definite standardized high plane worthy of the science.

In the middle of June, Dr. and Mrs. M. L. Crossley were both painfully injured in an automobile accident while en route to Providence, Rhode Island, to attend the Commencement exercises of Brown University.

All members of the Institute will be gratified to learn that both Dr. and Mrs. Crossley have recovered fully from their injuries.

* * * *

The offices of Hoke, Incorporated, have been removed to larger quarters at 122 Fifth Avenue, New York City.

* * * *

James B. Conant, Chemist

By Hans T. Clarke, F.A.I.C.

Dr. Conant's associate and friend reviews the 1934 medalist's career and researches at the medal presentation ceremonies of the Institute.

THE American Institute of Chemists has since 1926 annually presented a medal in recognition of "outstanding service to the science of chemistry and the profession of chemist in America." That there are many ways in which such service can be rendered is recognizable from the list of recipients of the Institute's medal:

1926 William Blum
1927 Lafayette B. Mendel
1929 Mr. and Mrs. Francis P. Garvan
1930 George Eastman
1931 Andrew W. and Richard B. Mellon
1932 Charles H. Herty
1933 Henry C. Sherman

We meet tonight to do honor to Dr. James Bryant Conant, organic chemist and educator. Conant's career better illustrates the proverb "a rolling stone gathers no moss"—if moss be a desirable attribute—than the saying "home-keeping youth have ever homely wits." Born in Boston, the farthest point from that city at which he acquired his education was Roxbury, Mass., where he attended the Latin School for five years. During this period he came into contact with Professor N. H. Black, now of Harvard, who was then instructor in physics and chemistry at the Roxbury school. It is said that it was sometimes difficult to decide which of the two was teaching the other. Entering Harvard College in 1910, he came, unlike most freshmen, to college not only with advanced standing, having anticipated the regular elementary chemistry course, but according to accounts given by his classmates—with quite definite ideas of his entire curriculum and how to reach his objective. He thus completed the regular four year course in three years without difficulty. At the same time he entered freely into extra-curricular activities, and was never regarded as a "grind." He was, as he still is, very much alive to subjects of general interest.

particularly those related to history, sociology, economics, and politics.

In his junior year, Conant began to take part, as laboratory assistant, in the teaching work of the department of chemistry. About the same time he served on the editorial board of the Crimson, a most exacting and time-consuming activity, which might well, in the case of any other man, have wrecked his college work.

After obtaining the A.B. degree in 1913, he continued in graduate work in Harvard University, obtaining his doctor's degree in 1916. His work during that period consisted of a study, with Professor Kohler, of cyclopropanes, and some researches, published jointly with Dr. F. G. Kelley, relating to electrometric titration methods for the determination of vanadium and chromium. This last was not organic chemistry, but it is of especial interest in that it formed the starting point of his most important researches.

GRADUATION was followed by an appointment as Instructor in Chemistry, a position which he held until 1917. During this year, only one publication, apart from those on cyclopropanes, appeared under his name, and this in the rather surprising form of a patent for a process for the manufacture of benzyl chloride. However, he also began the study of addition reactions, the first of a long series of papers on this subject appearing in 1918.

Following the entrance of the United States into the World War, Conant volunteered for chemical research work under the War Department, and was assigned to the experimental station at the Catholic University in Washington. Those were the days when the development of war gases was much in the foreground, and this tasteful problem fell to his lot. Promotion was rapid; a Lieutenancy in the Sanitary Corps, a Captaincy, and a Majority in the Chemical Warfare Service followed in quick succession. The Armistice found him in command of the "Mousetrap," the experimental plant in Cleveland for the manufacture of Lewisite.

In 1919 Conant returned to Harvard with the appointment of Assistant Professor. After one investigation dealing with an organic derivative of arsenic—possibly a carry-over from his wartime experiences—he again took up the study of addition reactions, a subject which he pursued intensively for some five years and never entirely abandoned. During this period he joined his former instructor at the Roxbury Latin School, Dr. Black, in the writing of a manual of practical organic chemistry. Seven years later the same authors collaborated on a book on general science.

Applying his experience, acquired in 1915, of electrometric methods to the organic field, he took up in 1922 the electrochemical study of irreversible oxidations and reductions, a field which had been widely neglected by physical chemists, possibly on account of the difficulty in theoretical interpretation. This he developed in a series of investigations extending over a dozen years, and it is largely to his efforts that organic chemists owe their recognition of the general principles involved. Reversible reactions were, moreover, not neglected. In 1922 he joined T. W. Richards (later his father-in-law) in a study of the electrochemistry of sodium amalgams, and in the following year took up, with the intellectual approach of an organic chemist, the question of the energy relations of quinone-hydroquinone systems. He also demonstrated the dependence of presumably irreversible hydrogenations upon the reduction potentials of the hydrogen-catalyst system. Among reversible systems studied, one of the most interesting was the formation of free radicals by means of reducing agents, wherein the readiness with which different substances yield such radicals was correlated with the potentials of reductants capable of effecting the conversion.

THE year 1923 also saw the appearance of the first paper on hemoglobin, in which it was suggested that this biologically important substance should be regarded as a complex ferrous salt, analogous on the one hand to the ferrocyanides and on the other to certain cobalt amines studied by Werner. In both hemoglobin and oxyhemoglobin the iron is in the ferrous condition, the oxygen in the second named compound being held in essentially molecular form. In methemoglobin, in which the iron has been oxidized to the ferric condition, the valence relations of the complex are so altered that the capacity to combine with molecular oxygen is lost. This conception had been adumbrated by previous investigators, but emerged from the conjectural state only when quantitative electrochemical methods were applied to the problem. This important field was intensively developed through the next ten years, with results of great interest but too technical for detailed discussion here.

The close relation between hemoglobin and chlorophyll led naturally to studies, begun in 1926, of the green pigments of plants, and resulted in the construction of a constitutional formula differing slightly from that proposed by Hans Fischer. Chlorophyll resembles hemoglobin in possessing a porphyrin structure, composed of four cyclically linked pyrrole nuclei, but instead of iron it contains magnesium, and it is not

associated with protein. Biologically it is concerned with the photosynthesis of carbohydrate from carbon dioxide and water, and not (as is the case with hemoglobin) with the transport of oxygen. The approach was therefore purely organic chemical.

On the other hand, hemocyanin, the blue respiratory pigment contained in the blood of crabs, lobsters, and similar crustaceans, attracted Conant's attention by reason of its biological significance. It is, like hemoglobin, a chromoprotein capable of entering into loose combination with oxygen; unlike hemoglobin, it apparently contains no porphyrin component, and contains no iron, but copper, two atoms of which are present for every molecule of associated oxygen. The oxygenated hemocyanin is blue; when the oxygen is released the color disappears. In both forms, the copper is in the cuprous condition; on treatment with powerful oxidizing agents, a green cupric compound is reversibly produced. The potential of this cuprous–cupric system is much more positive than that of hemoglobin and methemoglobin, and it is interesting that hemocyanin does not lose its ability to combine with oxygen when it is oxidized to methemocyanin.

THE variety of the other lines of investigation undertaken by Conant during the past ten years testifies to his phenomenal intellectual energy: Studies of absorption spectra at liquid air temperatures (a direct outcome of the work on chlorophyll); the non-relation of equilibria to reaction-velocities in organic reactions; the formation of organic free radicals by thermal dissociation; the cleavage of carbon–carbon linkages by alkali metals; the addition of free radicals to unsaturated compounds; polymerization under extremely high pressures; free energy and rates of enolization; determination of the strengths of weak acids and bases in non-aqueous media. He even found time to study the rates of coupling of diazo compounds with phenols in buffered solutions, an investigation of fundamental importance to a knowledge of the most general reaction by which dyes are prepared.

In 1925 Conant was appointed Associate Professor by Harvard University, in 1927, Full Professor, and in 1933, President. He was twice a visiting lecturer at the University of California. He has repeatedly visited Europe, but has never worked in any laboratory abroad. As a professional chemist he has undertaken a variety of duties in the public interest. In the American Chemical Society he has served as Secretary and Chairman of the Organic Division, and as Chairman of the North-

eastern Section; he is a member of the National Academy of Sciences and has served on the National Research Council; he was a member of the group which founded Organic Syntheses, and served his full ten years on the editorial board; he is a Scientific Director of the Rockefeller Institute for Medical Research. Public recognition by his fellow chemists has been expressed in the award of the William H. Nichols medal and the C. F. Chandler medal.

Conant is an uncommonly stimulating teacher, both in the lecture-room and in the laboratory. In conjunction with his researches he has left his impress on numerous graduate students and collaborators, and his influence on their training is one of his prime contributions to chemistry in America. With his election to the Presidency of Harvard University this intimate personal influence has of necessity diminished; however, all who have seen him in action recognize that all branches of knowledge cannot fail to derive benefit from his encyclopaedic knowledge, quick graps and cool judgment. Harvard is truly to be felicitated on the choice of its president.

The Institute has lost two prominent Fellows by death during the past summer: William H. Walker and Henry Arnstein. Dr. Walker was fatally injured when, apparently, he fell into a doze while driving his car. Dr. Arnstein was the victim of several weeks illness from a complication of diseases.

William Hultz Walker, born in Pittsburgh on April 7, 1869, was one of the country's distinguished chemists. He graduated from Pennsylvania State College with high honors in 1890, and received his Ph.D. from the University of Göttingen in 1892. He spent many years as lecturer and instructor in chemical engineering subjects at Massachusetts Institute of Technology and was prominent as chief of the Production Division of the Chemical Warfare Service during the war.

Dr. Walker's work was chiefly concerned with the production of art glass, the manufacture of silver, the technology of petroleum and the prevention of corrosion of ferrous metals. He was a Fellow of the American Institute of Chemists, of the American Academy of Arts and Sciences and of the American Iron and Steel Institute. He is survived by his widow and one son.

* * * *

Henry Arnstein was born in New York on November 10, 1886. He was educated entirely abroad, receiving the degree of D.Sc. at Berlin in 1907 and D. Eng. at Heidelberg in 1908. He specialized in the fermentation industries and designed many plants for the production and utilization of yeast, sugars, starches and kindred products. Dr. Arnstein was a prolific writer and a distinguished linguist, writing freely in English, German, French or Spanish. He acted as Chemical Consultant to many Latin-American Governments. He was a Fellow of the American Institute of Chemists, a member of the Franklin Institute, the Pennsylvania Academy of Science, the American Chemical Society and many other scientific societies. Dr. Arnstein is survived by his widow and three sons.

Secretary's Annual Report

By Howard S. Neiman, F.A.I.C., *Secretary*

Review of the Institute's Growth and Progress during the year ending May 1, 1934.

NOTWITHSTANDING the unfortunate general economic conditions which had a material effect upon the financial and professional status of chemists, the season of 1933–1934 has been a most successful one. During the season the National Council held 11 meetings with an average attendance of eight Councilors, the Pennsylvania and Washington Chapters being represented at each meeting.

The following actions were taken during the season:

ELECTIONS

Fellows	20
Associates	11
Juniors	2
Student Members	3
Total	36

LOSS OF MEMBERSHIP

Resignations: Fellows	3
Deceased: Fellows	3
Total	6
Increase in membership	30
Associates raised to Fellows	2
Juniors raised to Associates	5

PRESENT MEMBERSHIP

Honorary members	7
Life members	2
Fellows	582
Associates	99
Juniors	68
Student members	5
Total	763
Membership May 1, 1934	763
Membership May 1, 1933	733
Increase	30

While we elected but 36 members during this season and 101 during the season of 1932–1933, this increase in new members is considered an excellent showing in view of the long economic strain to which chemists have been subjected during the past few years, and which became more evident during the season just closed; and it is believed that an increase of membership of 30 during the past season is indicative of the appreciation among American chemists of the importance of the Institute in their professional and economic lives.

Each of the Chapters has evidenced increased activities along the lines of the objectives of the Institute, and a special note should be made in this respect of our new Chapter, the Niagara, which has placed itself, perhaps, at the head of our Chapters in its earnest endeavor to interest the chemists in its section in the advantages of the Institute as a means of forwarding the interests of American chemists.

Because of the inability of Edward L. Gordy, A.A.I.C., to continue his unexcelled and highly appreciated efforts as Editor of THE CHEMIST, it was necessary for the Council to obtain a new editor for the official organ of the Institute, and it has obtained the services of Alan Porter Lee, F.A.I.C. It is believed that under this new arrangement THE CHEMIST will approach and perhaps excel its excellency of two years ago, which was necessarily decreased because of the financial condition of the Institute immediately following the withdrawal of the assistance of The Chemical Foundation.

We filed a Code for Chemists with the National Recovery Administration, and while the Administration has held thus far that chemists do not come within the purport of the National Recovery Act, the Council has not lost its interest in this matter and will continue in its endeavor to have chemists, irrespective of their particular activity, included within the Code. A special meeting of the Institute was held in order to consider the financial condition of the Institute, and the suggestions made at that time will undoubtedly revert to its financial betterment.

It would seem that the general membership of the Institute is rapidly awakening to its importance, and as the National Council is merely a governing body, the results of its administration largely dependent upon the support and assistance it receives from the members, it is hoped that this knowledge of the importance of the Institute will continue to grow during the coming season, and that the National Council may receive increased support through suggestions and advice, in order

that its actions may be a more complete reflection of the desires of the members.

The strength and influence of the Institute depend entirely upon the quality and quantity of its members. We cannot hope to be a leading, influential organization in the advancement of the interests of American chemists unless we are numerically strong enough to impress the public and those with whom the Institute may have to deal with the fact that it is representative of a larger number of American chemists. A membership drive upon the part of the National Council will naturally result in an increase in membership, but after all a forward movement is more dependent upon the personal activities of each member in interesting his qualified friends in the objectives of the Institute and in obtaining their applications for membership.

Report of the Treasurer for the Year May 1, 1933 to April 30, 1934

By D. P. Morgan, F.A.I.C., *Treasurer*

ANNUAL STATEMENT

INCOME AND EXPENSE ACCOUNT—MAY 1, 1933–APRIL 30, 1934

Income

Cash Balance, May 1, 1933		$ 80.96*
Income:		
Dues	$4,276.36	
Advertisers	636.75	
Subscriptions	42.90	
Chemical Foundation	650.00**	5,606.01
Miscellaneous Credits		6.18
Total Income to April 30, 1934		$5,693.15

Expenditures

Rent	$ 693.49
Salaries	1,870.00
Stationery, Postage, Telephone, Printing, and Misc. Charges	678.39
Rebates:	
Carried over	133.99

Current	200.24	
Medal Award for 1933	50.75	$3,626.86
"The Chemist" Printing		$1,965.25***
Total Expenditures to April 30, 1934		$5,592.11
Balance in Chase Bank April 30, 1934		$ 101.04

* Actual balance carried over was $310.96, which includes $230 of dues for 1933–1934.

** This amount was due in 1932–1933 for THE CHEMIST expense.

*** This amount includes payments for March and April, 1933 issues of THE CHEMIST but does not include payment for February, and March-April, 1934, issues.

Note by the Incoming Treasurer

Response of the Institute's Membership to Dues statements for the current year (1934–1935) has been so satisfactory to date that the condition of the Institute's finances as this issue of THE CHEMIST goes to press is as follows:

Cash on hand in Chase National Bank	$1,459.73
All unpaid liabilities to date	221.91
Net Cash Balance on hand	$1,237.82

It is anticipated that the current improvement in ability of members to meet their obligations for dues and adherence to the careful system of budgeting expenses which was maintained by the retiring Treasurer will insure a continuation of the present sound financial condition of the Institute.

ALAN PORTER LEE, *Treasurer*

ACCEPTANCE ADDRESS

(*Continued from Page 119*)

ologists, and organic chemists might combine to accomplish. Now in conclusion I should like to thank the members of the American Institute of Chemists once again most sincerely. President Crossley, I shall cherish the memory of this evening for many long years to come.

INSTITUTE NOTES

National Council

May Meeting

The one-hundred and twelfth meeting of the Council of The American Institute of Chemists was held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on Monday, May 21, 1934, at 1:00 o'clock P. M.

President Henry G. Knight presided.

The following Councilors and Officers were present: Messrs. Crossley, Jackson, Moody, Morgan, Neiman, Snell, Taggart, Zons and Miss Wall. Alan Porter Lee, Editor of THE CHEMIST, was also present.

The minutes of the previous meeting were adopted. The Treasurer's report was accepted. The following new member was elected:

FELLOW

AARON FRIEDMAN, *Chemical Engineer*, 390 Fourth Avenue, New York, N. Y.

The Secretary read a letter from Mr. E. F. Cayo of the Pennsylvania Chapter relative to chapter promotion in the South Jersey and Wilmington area, and upon motion made and seconded the communication was filed for the present.

June Meeting

The one-hundred and thirteenth meeting of the Council of The American Institute of Chemists was held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on Thursday, June 21, 1934, at 6:30 o'clock, P. M.

In the absence of the president and vice-president, Mr. Howard S. Neiman presided. The following Councilors and Officers were present: Messrs. Baker, Jackson, Kenney, Lee, Neiman, Taggart, and Miss Wall.

The minutes of the previous meeting were approved. The Treasurer reported

a bank balance on hand as of June 21, 1934, of $861.27, and the report was accepted and filed.

The Secretary read a letter from Mr. Howard W. Post of the Niagara Chapter, containing a number of suggestions, which were acted upon by the Council as follows: The suggestion that the members of the American Institute of Chemists have an opportunity to get together at sometime during the meeting of the American Chemical Society at Cleveland next September was acted upon by requesting Dr. Baker to arrange for an American Institute of Chemists' luncheon at that time, and to obtain a speaker who, because of his reputation and the subject of his address, would probably attract others than members of the Institute to the luncheon. The suggestion relative to the National Research Council and the National Academy of Sciences was acted upon by requesting the Secretary to write the National Research Council and the National Academy of Sciences asking if there is any reason why The American Institute of Chemists should not be represented; and that Dr. Colin B. Fink should be consulted in this matter. With reference to the suggestion that a representative of the Institute keep in close touch with code activities in Washington, it was suggested that the Secretary request Dr. Moody to give this his attention.

The following new member was elected:

FELLOW

LEDRA MORRISON LAWTON, *Chief Chemist*, Harrison Division of General Motors, Lockport, N. Y.

Dr. Baker stated that the Council of the New York Chapter had suggested an insignia for letterheads, and upon motion made and seconded, the President was requested to appoint a committee to consider the subject and report back at the next meeting of the Council. Dr. Baker stated that the Council of the New York Chapter had suggested the idea of having someone appointed to obtain new members on a commission basis, and Mr. Kenney reported as chairman of the former committee appointed for this purpose.

Upon motion made and seconded, it was unanimously

Resolved, that the sympathy of the Council be extended to Dr. and Mrs. Crossley, because of their late, unfortunate accident; with the hope of their speedy and complete recovery.

New York Chapter

Annual Report 1933–34

The Chapter Council held eight meetings during the year, leaving regular meetings free for the presentation and discussion of professional problems.

Seven program meetings were held as follows:

Sept. 22, '33 (Chemists' Club). Joint Meeting with Metropolitan Technical Societies as Guests. Subject: The Chemist and the NRA. Speakers: C. C. Concannon, Preston S. Millar, John M. Weiss.

Oct. 20, '33 (Chemists' Club). Subject: Problems of the Institute. Speakers: F. A. Wright, Ross A. Baker.

Dec. 15, '33 (Chemists' Club). Subject: The Effects of Inflation in Foreign Countries; speaker: Walter S. Landis. Subject: The Functions of Government; speaker: William B. Guthrie.

Jan. 12, '34 (Childs' Restaurant). Joint Meeting with the Chemistry

Teachers' Club. Subject: Chemical Education. Speakers: H. E. Taylor, M. L. Crossley.

Mar. 16, '34 (Childs' Restaurant). Subject: The Chemist and Patent Law. Speakers: Lloyd Van Doren, C. W. Fairbank.

Apr. 9, '34 (Winfield Scott Hotel, Elizabeth, N. J.). Joint Meeting with the New Jersey Section, A. C. S. Subject: The Hydrogen Ion in Industry; speaker: George A. Perley. Subject: Research and the Chemist; speaker: Walter J. Baëza.

May 11, '34 (Chemists' Club). Annual Meeting and Election of Officers.

The following committees functioned during the year: (1) By-laws—L. Van Doren, *Chairman*, Karl Herstein and Jacob Jay. (2) Membership—Karl Herstein, *Chairman*, F. D. Snell and L. W. Bass. (3) Publicity—Florence E. Wall. (4) Codes for Chemists—T. A. Wright. (5) Nominating—I. Hochstadter, F. W. Zerban, L. Van Doren.

Revised By-laws were adopted November 24, 1933.

At the Annual Meeting, the following persons were elected to serve the Chapter during 1934–35: B. H. Knight, *Chairman;* Jerome Alexander, *Vice-chairman;* Walter J. Baëza, *Secretary-Treasurer;* R. A. Baker, *Representative on the National Council;* L. W. Bass, J. F. X. Harold, C. D. Ingersoll, *Chapter Councillors.*

Washington Chapter

Annual Report 1933–34

A considerable part of the meeting held Sept. 21, 1933, was devoted to making plans for getting new members. Dr. J. F. Couch, who teaches part time at the American University, gave an address on Educational requirements for the profession of chemist.

On Nov. 3rd, the Chapter was conducted through the ice plant and brewery of the Christian Heurich Brewing Co., which served the Chapter a delightful luncheon. This was followed by a brief business meeting.

For several years it has been a custom for the Washington Chapter to hold one meeting in Baltimore as a courtesy to our Maryland members. At 2:00 P. M. Feb. 10th, a good representation of the Chapter started a tour of inspection of the U. S. Industrial Chemical Co.'s plant at Curtis Bay. At six o'clock a group dinner was held in a private dining room at Miller Bros. restaurant. Following dinner B. W. Clark, A. I. C., spoke very entertainingly on the Institute of Chemistry of Great Britain and Ireland. His first-hand knowledge enabled him to speak authoritatively and his recital of the ups and downs of the British Institute gave encouragement to our own members.

Dr. F. G. Brickwedde showed and explained his apparatus for separating the isotopes of hydrogen. The chapter members, at the next meeting, were shown through the heavy water laboratory of the U. S. Bureau of Standards, and on Apr. 20th the following addresses were heard:

The Chemical Division of the Bureau of Standards, by William Blum.

Chemistry and Industry, by W. E. Emley.

The Attacks on Government Research, by J. F. Couch.

This was followed by a short talk on the aims and accomplishments of the Institute for the benefit of the considerable number of visitors present. Copies of THE CHEMIST and circulars of the Institute were distributed to all in-

terested parties. This was followed by refreshments.

The last meeting of the year was held on May 18th, at which time officers for the coming year were elected as follows:

Chairman: J. W. McBurney, Bureau of Standards

Vice-Chairman: C. W. Whittaker, Bureau of Chemistry and Soils

Secretary: F. O. Lundstrom, Bureau of Chemistry and Soils

Treasurer: J. H. Hibben, Carnegie Institution

Business meetings were held in conjunction with the trips, etc., listed above.

Much of the time and thought of the Chairman during the past year has been devoted to trying to get new members and to hold the interest of the old ones.

Pennsylvania Chapter

Annual Report 1933–34

The Pennsylvania Chapter has just brought to a conclusion a highly successful season. As can be seen from the following list of subjects, the greater portion of the program was devoted to the discussion of subjects intimately related to the economic status of the chemist:

Sept. 16, 1933. Trip through the Morris Arboretum recently acquired by the University of Pennsylvania.

Oct. 16, 1933. Glass-blowing demonstration by William Levitt of the Corning Glass Works.

Nov. 7, 1933. A discussion on the subject of taxation led by Mr. G. K. Kearney of the Philadelphia Ledger.

Dec. 12, 1933. Visit to the Fels Planetarium in the new Franklin Institute Building.

Jan. 9, 1934. A discussion on the so-called Tugwell and Copeland Pure-Food Bills led by Dr. Trumper.

Feb. 6, 1934. A discussion on the monetary situation led by Prof. S. Howard Patterson of the Wharton School of the University of Pennsylvania.

Mar. 6, 1934. A talk and demonstration on the subject of "Chemical Microscopy" by Dr. Cool of the University of Pennsylvania.

Apr. 9, 1934. A discussion on the "Chemist Under the New Deal" led by Dr. Arnstein and a talk on the work of the Technical Service Committee by Mr. Pease of the Engineers' Club.

May 8, 1934. A discussion on the subject of "New Jobs for Chemists" led by Dr. Lukens, director of the Harrison Laboratory, University of Penn.

The Chapter endeavored to do its part in all activities having to do with the economic status of the technical man. The Chapter was represented on the Philadelphia Chemical Council and cooperated to the fullest extent with the Technical Service Committee of the Engineers' Club. The Chapter was also represented at the public hearing on the Tugwell Bill before the Philadelphia Chamber of Commerce. The Chapter started the 1933–34 season with a deficit of $4.66 and ended the season with a balance in the treasury of $40.13.

Suggested Changes in the Constitution

Article II, Section 1, line 2, insert "(2) Life Members', after "Honorary Members." Change (2), (3), (4), and (5) to (3), (4), (5), and (6), respectively,

Article III, designate Section 2 as Section 2-a.

Insert the following section following Section 2:

Section 2-b. The officers, excepting the Secretary, and the nine directors or councilors at large, shall not be eligible to serve more than two successive terms in the same office or capacity.

Article III, rewrite Section 5 as follows:

Section 5. The two immediately preceding Past Presidents of the Institute shall be ex-officio members of the Council.

Changes in By-Laws

Insert before Article I:

These By-laws include the following articles:

Article I—Duties of Officers
Article II—Council
Article III—Audit
Article IV—Committees
Article V—The Medal of the American Institute of Chemists
Article VI—Meetings of the Institute
Article VII—Meetings of the Council and Directors
Article VIII—Quorum
Article IX—Nomination and Election of Officers and Councilors
Article X—Duties
Article XI—Use of Title of Fellow and Associate
Article XII—Forfeiture of Membership and Reinstatement
Article XIII—Order of Business
Article XIV—THE CHEMIST

Rewrite Article I as follows:

Section 1. It shall be the duty of the President to preside at all meetings of the Council and of the Institute. He shall call meetings of the Institute, of the Directors, or of the Council, when he deems it necessary, or on written request of at least three Directors for a meeting of the Directors, of at least five members of the Council for a meeting of the Council, or of twenty-five Fellows of the Institute for a meeting of the Institute.

Section 2. In the absence of the president, the vice-president or other member of the Council designated by the Council shall preside.

Section 3. The duties of the Treasurer and of the Secretary shall be those usually appertaining to such offices. The Secretary, in addition to performing the usual duties of that office shall discharge such other duties as may be imposed upon him by the Council.

Section 4. The duties of the Directors are those set forth in Article IV of the Constitution.

Change Article II to Article III and III to II.

Change the heading of present Article III to read "Council."

In present Article III, Section 1, line 4, as printed in the September, 1932, issue of THE CHEMIST, substitute "functions" for "powers" and delete the last sentence beginning "No payments."

Section 2, add the following sentence: No payments shall be made by the Treasurer without authority of the Council.

Add the following sections:

Section 3. The Chapter representative to the National Council shall present to and advocate before said Council all matters submitted to him by the Chapter for such presentation. He shall make a full report of such National Council actions as are of interest to the Chapter at each business meeting of the Chapter.

Section 4. Any member of the National Council who shall be absent from his duties for three successive meetings without satisfactory excuse in writing shall be declared by the Council to have vacated his office at its next subsequent regular meeting and the Council shall immediately appoint another member of the Institute to fill the office thus vacated until the next annual meeting.

Add the following article:

Article IV—Committees

Section 1. The Committee on Professional Education shall study and formulate an approved curriculum for the study of chemistry and chemical engineering and strive to secure conformity to such curriculum.

Section 2. It shall be the duty of the Committee on Ethics to consider such changes as may be desirable in the code of ethics, to investigate all infractions of such code and to present a full statement of findings in instances of infraction to the National Council.

Section 3. It shall be the duty of the Qualifications Committee to consider the qualifications of applicants for membership in the Institute.

Section 4. (This section shall be present Section 3 under present Article III.)

Section 5. The duties of all other committees shall be those indicated by the title or by the resolutions under which such committee was constituted.

Change Articles IV to XIII to V to XIV, respectively.

Present Article V, rewrite Section 5 as follows:

Meetings may be held by student members as authorized by the nearest chapter of the Institute.

Heading of Article VI to read: "Meetings of the Council and Directors."

Section 1, line 1, delete "periodically."

Section 2, line 2, delete "as far as practicable;" line 3, insert "concise" before "statement."

Section 5, line 1, substitute "meetings" for "that meeting."

Niagara Section

The 8th regular meeting of the Niagara Chapter A. I. C. was called to order by the Chairman, Saturday, July 21, 1934, at 8 P.M. at the camp of Dr. Arthur W. Burwell near Wilson, N. Y. Previous to the meeting a very enjoyable afternoon was spent at the beach followed by an equally enjoyable supper.

The Chairman instructed the Secretary to write the national headquarters for more data on matters discussed at the last meeting of the executive committee. The Committee on Professional Ethics reported through the Secretary that contacts would be established in the Fall wherever it was thought advantageous. The Welfare Committee presented no report. The Chairman suggested investigation of the justice of high premium rates for chemists on accident policies, also that any action along this line should be taken in cooperation with the national organization. The Chairman also suggested that the Committee undertake a cataloging of unemployed chemists in this area in cooperation with the similar committee of the A. C. S.

Publicity Committee presented no report. The Chairman reported that the Double Bond will continue to publish our notices, several articles are ready for the Buffalo Evening News, and material for talks is in process of collection. It was suggested that material submitted to the Double Bond should be written so as to make clear the fact that the Institute is cooperating with but not competing against the A. C. S.

Membership Committee Mr. W. R. Sheridan reported that the use of last year's system had brought in from 30% to 40% of each group invited to the meetings. Dr. Hyden for the incoming committee invited suggestions of names of possible guests. Mr. Smith suggested Dr. Johnson of the Orchard Park school system, and the Secretary presented the name of Dr. Visser-t-Hooft of the Lucidol Corp., Buffalo.

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Low Phosphorus Compound Impurities Plainly Labeled Saves Time

WITH the tremendous advances made in the chemistry of food, utilization of by-products, sanitation, etc., it is interesting to note new methods employed in making Phosphorus determinations.

Farber and Youngburg describe one method in ANAL. ED. Ind. & Eng. Chm. Vol. 4—No. 1, Page 107. Youngburg also outlines the determination of inorganic phosphate in Plasma or serum in Jour. Lab. Clin. Med. 16, 158, 1930.

In pace with progress when there are Phosphorus determinations to be made in meats, cereals, fruits or dairy products, chemists who must work quickly and accurately invariably favor Baker's C.P. Analyzed Reagents.

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To give chemists professional solidarity.

To put the profession back of a definite code of ethics.

To insist on adequate training and experience qualifications.

To educate the public to an understanding of what a chemist is.

To protect the public and the profession by fighting quackery.

To raise the economic status of chemists.

.....

HOWARD S. NEIMAN, *Secretary*
The American Institute of Chemists
233 Broadway
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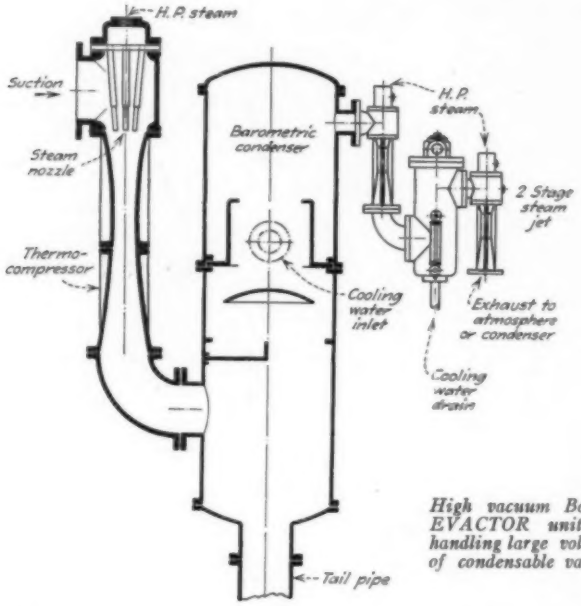

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